JULY 1967
VOL. 32 NO. 12

Soil Conservation

DEVOTED TO THE WISE USE OF
LAND AND WATER RESOURCES

LOCAL GOVERNMENT'S ROLE IN CONSERVATION

An RC&D Project
Page 267

Progress in the Great Plains
Page 270

Zoning and Sanitary Ordinances
Page 273

A Hillside Development Guide
Page 276

SOIL CONSERVATION SERVICE

U. S. DEPARTMENT OF AGRICULTURE

Local . . .

Conservation is a local matter.

True, the consequences of resource use—or misuse—affect the whole Nation.

But every conservation act must be performed at a specific location, on a specific piece of real estate.

It follows that local units of government, through which people can deal with resource problems at home, must be the action arms of the Nation's conservation effort.

Cooperation: Soil Conservationist R. W. (Bob) Oertel has been in the midst of the activity swirling around growing Atlanta, Ga.

He writes from a good vantage point of how county, municipal, and other local officials put together a plan to counter Gwinnett County's growth problems (p. 267).

The result is an outstanding Resource Conservation and Development Project.

The Soil Base: In many places soils information is being used to guide land use changes.

In southeastern Wisconsin, Community Planner W. J. Kockelman and SCS Area Conservationist Howard Hass have labored together to fashion ordinances to direct development in harmony with soil characteristics (p. 273).

And in the San Francisco Bay area, the Black Mountain Soil Conservation District joined with other levels of local government to find safe standards for building on the area's hilly terrain (p. 276). Soil Conservationist Darwyn Briggs gives us an on-the-spot report.

COVER: An example of "leapfrog" development in the Santa Clara Valley of California that results in high costs to developers and higher taxes for adjoining farmland.

Soil Conservation

JULY 1967 **VOL. 32, NO. 12**

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267 Local Governments Lead the Way
Cooperative RC&D efforts mold a new Gwinnett County, Ga.
By R. W. Oertel

270 An Answer to Drought
Conservation measures installed by Plains farmers buffer land
By William L. Vaught

273 Tool for Town Planning
By Howard C. Haas and W. J. Kockelman

276 District Takes a Hand in Hillside Development
To guard and enhance its heritage
By Darwyn H. Briggs

279 Dual-Purpose Road Fills Make Lakes
By Franklin C. Kinsey

280 Dairyman Converts Entire Farm to Grass

281 Radio System Speeds Watershed Work

282 Recreation Is Big Factor in Farm Income

283 School for Retarded Discovers Water-Based Therapy
By William R. Hauck

284 Ex-Governor Believes in Wise Use of Land and Wildlife
A Conservation Profile

285 Review
Economics of Outdoor Recreation; Future Environments of North America; New Publications

287 From the Administrator
New Conservation Charter for USDA

288 Field Day Lets Students See Farm Activity

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Local Governments Lead the Way

Cooperative RC&D efforts mold a new Gwinnett County, Ga.

By R. W. Oertel
Assistant State Conservationist, SCS, Athens, Ga.

FACED with a whole host of "growth" problems that intensified daily, local government officials of Gwinnett County, Ga., decided to act. And act they did. The resulting Gwinnett County Resource Conservation and Development Project is bringing a new look to this suburban area of metropolitan Atlanta.

"We were having a hard time keeping ahead of the problems caused by so many new people moving into the county," says Uhland Freeman, former county commissioner.

"They were coming here to live, but most of them were working in Atlanta or some place else. We couldn't give them jobs at home, and we didn't have the extra taxes to provide all the additional services a growing population requires."

Demand for schools

B. B. Harris, county school superintendent, explained the pressure for new school buildings brought on by the rapid influx of new families.

"We've had to build schools at the rate of a room every week just to keep up. That costs a lot of money."

Miller Dial, chairman of the Upper Ocmulgee River Soil and Water Conservation District, remembers a different problem that prompted the local citizens to go the RC&D way.

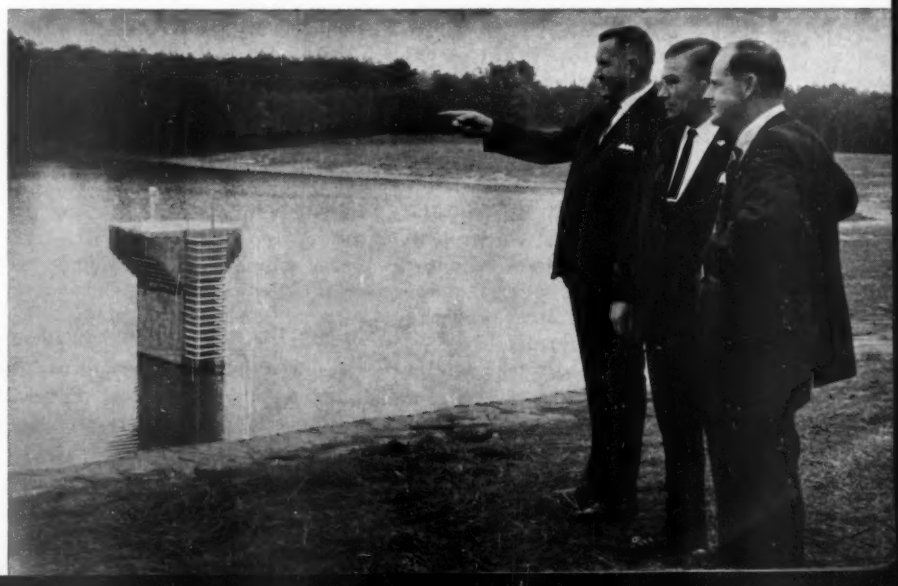
"Land that used to grow crops was being gobbled up for other uses like the new interstate highway, new houses, and filling stations. What bothered us most was that all this change was taking place with little thought about the best use of the land. All this construction was causing more serious erosion and drainage and flooding problems than we'd seen for a long time."

Up until 1960 the various segments of the local government considered the steadily increasing pains of the rural-urban changeover largely as problems of individual agencies and groups. At that time Gwinnett County became a part of the 5-county Atlanta Metropolitan Area Planning and Development Commission. A county commissioner and one man appointed by the commissioners represented the county on the planning commission.

Gwinnett County Planning Commission members began to realize that such problems as land use, water supplies, sewage disposal, pollution, transportation, and open space were interrelated and were shared by neighboring counties.

Furthermore, they found that solutions to these problems would need to be considered on a regional basis. This was the basis of the work of the Atlanta Metropolitan Area Planning Commission under the direction of Glenn Bennett, executive director.

Meanwhile, the idea of some sort of further broad resource planning and development for Gwinnett



Ray Morgan (left), chairman of the Gwinnett County commissioners, and Scott Dee and K. A. McMillon of the RC&D Project board of directors discuss a new watershed structure in the county.

County was being explored seriously by the Agricultural Committee of the Chamber of Commerce. Representatives of various agricultural agencies, the Upper Ocmulgee Soil and Water Conservation District, the county and city governments, and the Atlanta Metropolitan Planning Commission joined with the Chamber of Commerce to plan for possible action.

RC&D comes along

The real break for the Gwinnett folks came with the enactment of the Food and Agriculture Act of 1962. This legislation authorized the Department of Agriculture to work with the local people to accelerate their resource planning. The Gwinnett County people were ready to take advantage of this new law and quickly took the steps necessary to organize the Gwinnett County RC&D Project. It became 1 of the first 10 projects in the Nation.

The Upper Ocmulgee River District and the Gwinnett County government sponsored the project. A board of directors made up of leading local citizens was established by the sponsors to represent them in developing and carrying out the project plan. Valuable leadership and support were provided by the Chamber of Commerce, Atlanta Metropolitan Planning Commission, city and county officials, and others.

Application and plan

The sponsors' application was found satisfactory by the Department of Agriculture, and the Secretary authorized planning assistance. SCS State Conservationist C. W. Chapman promptly appointed a project coordinator to help the local people develop a comprehensive project plan. The coordinator was to serve also as a focal point for assistance from other Federal, State, and local agencies.

Preparation of the work plan included four major phases: (a) An inventory of natural resources, (b) evaluation of the inventory findings, (c) development of alternative proposals, and (d) selection of specific project measures.

Many State and Federal agencies helped in the accumulation and study of resource data. Studies of population, housing, schools, income, and open space completed earlier by the Atlanta Metropolitan Planning Commission were made available to the RC&D board of directors. Other groups obtained up-to-date information on land, water, wildlife, forests, recreation, and industries.

The mass of information about the area's current resources and projected needs for the future was impressive to everyone involved in the preparation of the work plan.

"This was the first time we had really taken a serious look at what we had to work with in the county and what our needs would be in the years ahead," said R. L. Van Sant, the original chairman of the RC&D board of directors and present manager of the Chamber of Commerce.

"The real fun started when we began to decide how we could make the best uses of the resources for the good of the county as a whole. Everybody had ideas, and our big job was sorting them out and deciding which ones had the best possibilities."

The Gwinnett County RC&D Project plan eventually evolved after numerous planning sessions. Almost everyone interested in the future of Gwinnett County had taken a part and was proud of it. The planning process had proved to be the cohesive force pulling local people together to think about and plan for the future.

The completed plan was approved by the Georgia Soil and Water Conservation Committee acting in behalf of the Governor.

Putting the plan to work

The Secretary of Agriculture in January 1965 authorized Federal assistance to put the plan into operation, and local people moved into high gear to prove that the "plan" was not "bureaucratic wheel spinning" but a realistic blueprint for progress.

An increased SCS technical staff was assembled and headquartered in space donated by the county government. The Georgia Forestry Commission assigned a forester to the project and located him with the SCS staff in the RC&D headquarters.

The Information Committee and other RC&D committees moved into action, each promoting its particular portion of the plan. The RC&D story was carried to every nook and cranny of the area to create more interest, enthusiasm, and action.

The Agricultural Stabilization and Conservation Service stepped up its cost-sharing aid for land use conversions under the Cropland Conversion and Appalachia programs. The Georgia Agricultural Extension Service added a landscape specialist to its staff to help with beautification aspects of land-use planning. The Georgia Game and Fish Commission increased its technical assistance to landowners.

See the results

Representatives of local, State, and Federal agencies helping the sponsors carry out the plan have shown unusual teamwork talking about "our project." But shrewd leadership by the board of directors is also inspiring friendly competition between agencies. All of this is resulting in greater efforts by everyone toward achievement of the project goals.

Many accomplishments have been made in the 2 years since the plan was approved. All contribute toward the ultimate goal of developing and using the area's resources to raise the economic level of the people and provide for an orderly transition from a rural to an urban-fringe area.

A generalized soil map is being used to plan major land use

changes in the county. A detailed soil survey, now being published, will be useful in helping landowners develop conservation plans and in subdivision layout and design, sewage disposal planning, and industrial park development.

Through the stepped-up technical assistance program, 300 landowners have developed conservation plans, and more than 60 have revised existing plans. More than 1,000 cooperators with the Upper Ocmulgee River District have been helped to apply conservation measures. Consultive assistance has been given to more than 50 landowners and organizations.

Collectively, these land-treatment measures have created an estimated 500 man-years of employment annually with an income increase of $1,750,000.

Watershed-protection and flood-prevention work has been stepped up, and woodland improvement and management are making more efficient use of the forest resources. Wildlife management and the development of recreation facilities are bringing both income and recreation opportunities to thousands of residents. It is estimated that the watershed, wildlife, and recreation activities have added 347 man-years in employment with an annual income increase of $2,812,000.

A place to work

Industries outside Gwinnett County have become increasingly aware of the improvement in the total living environment as a result of RC&D activities. Already 19 new enterprises with a capital outlay of over $19 million have located in the new industrial parks being established. These industries have added jobs for 2,200 workers with an added annual income of $19 million.

Supporting measures consisting of public utilities, institutions, shopping centers, and the like have brought about an additional 254 man-years of employment with an esimated annual income increase of $3,405,000.

Planning conservation work at a construction site: (from left) W. S. Carrington, RC&D board of directors; George Norris, SCS; Al Rubin, branch manager, Globemaster Atlanta, Inc.; Lloyd Harris, RC&D Project coordinator.

Commissioners of the county government, RC&D directors, and the technical staff have given roadside erosion control and beautification their special attention. Sixty miles of roadsides have already been treated, and plans have now been completed to do 247 miles more this year.

Ray Morgan, chairman of the commissioners, is a firm believer in the roadside stabilization work. He justifies it by saying, "We commissioners know it makes good sense to stop erosion on these bare roadsides. The work saves considerable tax money because the roads are easier to maintain. Besides that, the roadbanks are a lot more attractive."

Conservation work on school and hospital grounds and areas around industrial plants and shopping centers is a fully recognized part of the work being carried on by local groups in the RC&D Project. Conservation plans to control erosion and drainage problems and to make the areas more attractive involve 23 school and 3 hospital grounds.

"We've come a long way in the past 2 years toward achieving the goals we set in our original work plan," stated Scott Dee, chairman, RC&D board of directors. "We've seen all segments of local, State, and Federal government team up with our local citizens in planning and carrying out this project. Everyone seems to be anxious to work with us for the good of the entire community." ♦

District Supervisors Have Five Degrees

The feeling that farming deserves the best in education spurred the people of St. Mary Soil and Water Conservation District, Louisiana, to select as their supervisors five men who hold college degrees, three bachelors', one master's, and one doctor's. Most of the degrees are in the field of agricultural science.

These conservation leaders are called on by many community, parish, and State groups to serve in places of responsibilities. Because of their capabilities and education, they now serve in positions for 30 such groups.—GENE WARREN, JR., *Assistant to State Conservationist, SCS, Alexandria, La.* ♦

An Answer to Drought

Conservation measures installed by Plains farmers buffer land against emergency

By William L. Vaught
Resource Development Division, SCS, Washington, D. C.

AS WINTER became spring this year, the Great Plains again was in the grip of a withering drought, with wheat failing in southern areas, stock ponds drying, grass still brown and brittle, and landowners worriedly waiting for moisture before going ahead with further planting.

The nightmare of the 1930's was being recalled by newsmen who wondered if another Dust Bowl was awaiting cue in the wings, and conditions were being compared with the start of the severe but less punishing drought of the 1950's.

Complete plan does it

As the succession of dry weeks continued, this conclusion was clear: Complete soil and water conservation, with the proper use and management of related resources, is a practical and profitable answer to drought and the other risks of Plains agriculture.

Any doubt about this must have been dispelled by now by the mounting evidence on the lands affected and by the testimony of landowners who had entered the Great Plains Conservation Program in its beginning years and had carried their contracts with Secretary of Agriculture through to completion.

The Great Plains Program alone was authorized by legislation in 1956 and put into operation in 1958 as a pilot effort to show that the work being carried on by landowners in cooperation with soil and water conservation districts can bring a new degree of security to land and economy in the Great Plains.

In the use of this unique regional program, conservation districts have furnished proof of their effectiveness as local entities through which people and their government—local, State, and Federal—can work together to develop and conserve natural resources for maximum benefit to all the people.

Conservation districts lead

The districts, administered by locally elected people, promptly provided the necessary leadership in getting the program into action. With two decades of experience already behind them, district leaders won the confidence and challenged the enterprise of landowners who realized the need for additional conservation work.

The program was an additional tool for use by the Soil Conservation Service and other agencies in assisting soil conservation districts. As one landowner entered the program and proceeded with his work, his neighbors became interested. Activity spread like ripples in a pond.

The Great Plains Conservation Program differs from the going program of the conservation districts throughout the country only in these elements: There is cost-sharing to enable the landowner to do the work fast and a schedule to provide order and system in doing it.

The essential difference is that the landowner sets out with a complete plan for all needed conservation work, knowing that he will carry it to completion, if he can, by a given date. Usually he seems to gain momentum as he proceeds, so that he finishes the job considerably ahead of schedule.

By the end of 1966, 7,886 landowners in 407 counties participating in the Great Plains Conservation Program had completed the work they set out to do.

One of them, Alfred Unterdahl, a cooperator with the Morton County Soil Conservation District in North Dakota, looks back to 1961, a dry year in his country. Unterdahl that year had a successful crop, but "most people didn't bother to take their harvesting machinery out of the barn," he said.

Val Gervin, also in North Dakota, reports better income from his livestock, with grasslands more productive, water where it is needed for uniform grazing, and heavier steers at sale time.

One of the first ranchers in Wyoming to enter the program was Jack Simpson near Moorcroft in the Buffalo Belle Soil and Water Conservation District. As a business investment, Simpson looks back on his work under the Great Plains Conservation Program as sound and profitable—to the extent of making his income 10 percent better.

"But I didn't do anything that didn't need to be done as a matter of good business," was his explanation.

A brighter future

There was the 1960 crop year, unsatisfactory for most farmers in the area. Simpson's wheat, benefiting from extra moisture he was able to save with terracing and stubble mulching, gave him between 15 and 16 bushels an acre. Most growers in that area didn't harvest.

The 1966 season was relatively short, moisture-wise. Most producers were happy with 19 to 20 bushels an acre. Simpson, with his cropland in improving condition, harvested nearly 26 bushels an acre.

The community of Hawley in the

The added incentive provided in the Great Plains Conservation Program has been useful in small watershed projects in the Plains. This is the William J. Gentry place, Bead Mountain, in the Gering Drain Watershed Project in the Scotts Bluff Soil and Water Conservation District of Nebraska. Complete land treatment lends support to the watershed's engineering works. Bead Mountain was a landmark for the wagon trains on the historic Oregon Trail of pioneer days.

Middle Clear Fork Soil and Water Conservation District in Texas has brightened its appearance and economic future as a result of investment by a substantial number of its citizens in complete soil and water conservation. Dense stands of "shinnery" brush—48,000 acres of it—preventing the growth of grass, was holding back profitable use of the land resource.

More than 40 landowners, most of whom used the accelerated technical help and cost-sharing offered under the Great Plains Program, have brought 10,000 acres of the thick-growing shinnery under control. By using this program in conjunction with ACP cost-sharing and FHA credit, landowners have replaced expanses of useless brush with pasture grasses. Land that was producing nothing is bringing in income. Homes are being built in now-attractive settings. Contractors are busy. Land values are going up as opportunity is recognized. Other landowners are ready to start on their conservation plans.

The Great Plains Conservation Program has given welcome support to small watershed projects in the Plains. In the Gering Drain Project in western Nebraska, extensive land treatment, with many landowners participating in the Great Plains Program, made floodwater-retarding structures unnecessary in the southeastern part of the project area where agriculture is mainly of the dryland kind. Conservation practices on the watershed have given needed control of the runoff that can be expected

A vigorous stand of native grasses on a range area that has been cleared of shinnery (left) under the Great Plains Conservation Program pleases SCS Work Unit Conservationist Joe Pat Henson of Anson, Tex. The area was covered with dense and unprofitable brush (right).

from the area in a rainstorm.

In the Kent Creek Project in Texas' Cap Rock and Hall County Soil and water Conservation Districts, 90 percent of the needed land treatment has been applied by landowners, many of whom used help from the Great Plains Program.

Complete soil and water conservation plans cover 26,186 acres of the project area. Of the 51 operating units above the 7 structures in the project, more than half have installed Great Plains Conservation Program plans. Of 89 landowners below the structures, 40 are using Great Plains Program assistance. The needed practices in 24 of the 66 Great Plains contracts in the project have been fully applied.

The outlook: More effective floodwater reduction, a longer project life, and more efficient use of the area resources in the project.

County governments are finding ways to make use of some of the conservation practices being installed. The county road right-of-way often provides a practical location for a needed conservation structure, such as a stock water or erosion control dam. Many times the dam can be adapted to serve as a bridge or culvert. Cooperative agreements covering the working arrangements and the division of cost and responsibilities for construction and maintenance are easily worked out.

The number of landowners engaging in the program long since passed the 25,000 mark. As a thousand or more complete their work each year, their places are taken by other landowners ready to begin. There has generally been a backlog of 4,500 to 5,000 waiting to enter the program.

At last accounting the cropland converted to grassland in the program had reached 1,050,000 acres. This—especially the changing of unsuitable cropland to grass or tree cover—had been a prime objective in the program from the outset.

Nearly 800,000 acres of damaged or depleted rangeland has been seeded to protective, productive grasses.

Terracing? There are more than 35,800 miles of it applied.

The control of brush, in a battle still not being won, has totaled 2 953,000 acres.

As for water, the program has accounted for nearly 10,000 wells for livestock, with 13,400 dams, pits, and ponds mainly for livestock use, and 1,005 spring and seep developments.

The "treeless" Plains country has been garnished with 21,250 acres of tree windbreaks to protect fields, farmsteads, and wildlife and to lend additional green beauty to the Plains landscape.

Add this to the work being carried on in the regular program of the soil and water conservation districts and other programs in the Plains and you have a significant new barrier against drought and other emergencies. ♦

Consumers Will Benefit from REA Loans

Nearly 7,700 consumers in 9 States will receive electric service as part of benefits resulting from $7,455,000 in loans approved by REA. To provide new service and to improve service for present consumers, REA-financed rural electric systems will construct 617 miles of distribution line, 16 miles of transmission line, 9 substations, and headquarters facilities. ♦

W. J. Kockelman explains to a group of citizens and developers the use of soil survey information in planning a residential development.

Tool for Town Planning

By Howard C. Hass and W. J. Kockelman

Area Conservationist, SCS, and Chief Community Planner, Southeastern Wisconsin Regional Planning Commission, Waukesha, Wis.

SOIL SURVEYS are extremely useful tools for proper community development. Besides helping public officials make land use decisions, graphically interpreted soil facts help the public to understand and support these decisions.

Backing up these statements are two ordinances recently adopted by local units of government in the seven-county Southeastern Wisconsin Planning Region.

One ordinance for Walworth County regulates private water supply and sewage disposal systems throughout the county's 16 civil towns, 4 cities, and 7 villages. Another, for the town of Belgium in Ozaukee County places farmland into an exclusive "A-1" zoning district which permits only agricultural use.

Both ordinances are believed to be among the first of their type in the Nation. And both draw their background and their support from soil surveys.

The Soil Conservation Service in cooperation with the Wisconsin Agricultural Experiment Station made a detailed soil survey for the counties of Kenosha, Milwaukee, Ozaukee, Racine, Walworth, Washington, and Waukesha during 1963-65. The Southeastern Wisconsin Regional Planning Commission contributed $130,000 to the cost of the survey.

Following the survey, the commission—in cooperation with SCS, the Wisconsin Cooperative Extension Service, and the soil and water conservation district in each county—began an educational program to show how soil surveys could be used for community planning and development. The goal is to reach all of the 153 local units of government with the educational, advisory, and review services offered by the commission's community assistance program.

Acting as a team, the commission and the cooperating agencies hold conferences and workshops; prepare news releases; provide soil maps and interpretations; prepare course outlines and display materials; and work with groups known to have a special interest in soil survey data. It's all coordinated through a detailed "memorandum of understanding" between the cooperating groups.

Demonstration site

One educational project is on the Waukesha County Farm. Here, 160 acres has been set aside as a soil demonstration site. The Regional Planning Commission, SCS, and the Waukesha County Park and Planning Commission developed land use plans for the site. The Waukesha County Extension Service sponsored and coordinated the project, and the University of Wisconsin gave technical and advisory assistance.

Information from the detailed soil maps was used to plan alternate uses of land, such as agriculture, residential with septic tank systems, residential with public sewer, industrial and recreation.

The soil facts were used first to develop a farm conservation plan related to the agricultural capabilities of the soils. Then two residential plans were prepared, one with large lots serviced by septic tank systems and another serviced by a public sanitary sewer system. The lots, dwellings, and filter fields are carefully located so as to avoid the soils that have "severe" or "very severe" limitations for such development.

Industrial and recreational land use development proposals also were made for the 160-acre demonstration site, each carefully related to the limitations of the soils for such uses.

Interested groups come to the

farm where they are shown large multicolored maps that locate the soils and describe their limitations for various rural and urban uses. Permanent pits have been dug at various locations to show soil layers and differences in soil material and structure.

Residential land developers visiting the site are able to see real examples of soil problems and their remedies. Architects and engineers are shown how soil maps can help them locate better building sites or alert them to the necessity for special design measures to overcome certain soil limitations. Surveyors who run percolation tests for septic tank filter fields can get a better understanding of soil differences and recognize high or fluctuating water tables where septic tank systems would not be approved by the State Board of Health.

Action in Walworth

The ordinances adopted by Walworth County and the town of Belgium are evidence of the effectiveness of this type of educational program.

Walworth County, just north of the Illinois State line, is an area of excellent farmland and scenic water areas—and of rapid urbanization since World War II. Much of Walworth County's development is being serviced by private well and septic tank systems instead of public water supply and sewerage systems. These brought problems.

"Foul-smelling lakeshores, contaminated wells, backyards saturated with sewerage effluent, and children with diarrhea were some of the problems and heartaches which prompted the county board to adopt a new sanitary ordinance," said Eugene A. Hollister, Walworth County supervisor.

On June 14, 1966, the county supervisors adopted a resolution directing certain county committees to prepare a sanitary ordinance aimed at: (1) Protection of health, (2) safety from disease and pestilence, (3) conservation and wise use of land and water resources, (4) preservation and promotion of the beauty of the county and its communities.

The ordinance was prepared by the Regional Planning Commission's community planning staff in close cooperation with the county health and zoning committees, the State board of health, and SCS.

The ordinance prohibits onsite sewage effluent disposal systems (filter fields) on soils that have very severe limitations such as flooding, high or fluctuating water tables, shallow depth to bedrock, ground-water contamination or ponding, overflow, runoff, or overwash.

It also prohibits this type of disposal system on soils which have severe limitations because of steep slopes or slow permeability, unless the applicant provides larger or alternate filter fields, terracing or reduction of steep slopes, or other corrective measures.

The ordinance also prohibits outdoor toilets, privies, and cesspools and the discharge of noxious and toxic material into lakes, watercourses, storm sewers, and drainage ditches. Many of the State board of health regulations pertaining to well and septic systems were adopted by reference. But greater distances from property lines, lakes, and streams were specified for wells, septic tanks, and filter fields; and larger capacities were specified for septic tanks.

On September 14, 1966, the county board passed the ordinance and created a position of sanitary inspector to administer it.

Spring floods isolate new houses in a residential area laid out without respect to the suitability of soils. Such unexpected problems are avoided where developers make use of soils and hydrologic information now available to them in southeastern Wisconsin Planning Region.

James A. Johnson, the new sanitary inspector, reports that, "Although in effect for only a short time, the sanitary ordinance has already promoted significant improvements in the design and installation of onsite sewage absorption disposal systems."

Zoning for Belgium

The town of Belgium lies in northeastern Ozaukee County, north of Milwaukee along Lake Michigan. Residents wanted to maintain productive farming operations, protect land and water resources, and prevent indiscriminate home building with inoperative sewage disposal systems.

"Soils with very severe limitations for urban development yet highly productive for farming, plus the disorder and costs connected with urban sprawl, were factors resulting in the adoption of our town's first zoning ordinance," said John W. Krier, town chairman. This ordinance divides the 37-square-mile town into several unique, exclusive districts.

Inventories showed that the town of Belgium contained lands with high agricultural capabilities, a high-value potential park site, wildlife habitat, and several areas with stands of commercial timber. But most of the soils in the town have severe or very severe limitations, either for private disposal systems or public sewer systems, because of flooding, high or fluctuating water tables, slow permeability, overflow hazards, or steep slopes along Lake Michigan.

A proposed zoning ordinance was prepared by the Regional Planning Commission's community planning staff with technical assistance by SCS. This ordinance placed the town's farmlands in an exclusive "A-1" zoning district which permits only agricultural uses. Farm dwellings are permitted only as an accessory use to the principal agricultural use, thereby avoiding unplanned, uneconomical, inefficient, and scattered subdivisions.

All drainageways, wildlife areas, stands of commercial timber, and wet lands not used for farming were placed in an exclusive "C-1" conservancy district. This district permits uses such as water-retention areas, floodways, wildlife preservation, fish hatcheries, fishing, hunting, and sustained yield forestry, as principal uses; grazing, orchards, truck farming, and wildcrop harvesting as conditional uses. It prohibits dumping, filling, cultivation, and mineral, soil, or peat removal or any other use that would substantially disturb or be detrimental to the natural flora, fauna, water regimen, or topography.

In addition, the zoning ordinance prohibits onsite filter fields on soils that have very severe limitations for such systems. Soils with severe limitations for such systems are carefully regulated.

Success of these ordinances in minimizing the problems of rapid urbanization shows that care of land and water resources contributes to the health, safety, beauty, prosperity, and general welfare of communities.

Close cooperation and coordination between local and regional planning staffs, conservation district supervisors, SCS conservationists, and county agents are necessary for thorough public understanding of soil survey data and their use by public officials for community planning and development. ♦

Cattle and Grass Good Enterprise

A COOPERATOR with the Coal County Soil and Water Conservation District, near Lehigh, Okla., O. F. Fowler believes in, and practices, soil and water conservation.

Mr. Fowler operates a 220-acre beef cattle enterprise. He thinks well of lovegrass for erosion control. When fertilized it is good for grazing, and it makes good hay for the cattle, he says.

O. F. Fowler uses lovegrass to control erosion, produce hay, and to graze.

He developed a good native grass meadow by cutting out brush and trees by hand. He completed clearing timber off his more level woodland, planted it to bermudagrass, and applied lime and fertilizer according to needs shown by a soil test by the Extension Service.

O. F. Fowler is participating in the Agricultural Conservation Program of conservation practices for pasture improvement. His pasture program uses tame and native grasses in combination. Cattle are taken off the lovegrass and native grasses during the fall and winter. Bermudagrass is grazed during the spring, summer, and fall.

"Saving some grass for fall and winter grazing saves expenses on the winter feed bill," he says.

Since his beef cattle unit is too small to take up all his time, Fowler finds time to do custom hauling for his neighbors and has developed good relations with them. They help each other by exchanging work when extra labor and equipment are needed.

The Fowlers have three children and two grandsons, and Mrs. Fowler is a teacher in the Atoka school system. ♦

The stereotyped pattern of development with similar houses crowded together on small barren lots (above) does not always bring the highest returns to the builder. Fewer houses clustered on "view" lots or larger homes carefully located in the terrain with green space between create fewer erosion problems and are attractive to buyers.

To guard and enhance its heritage . . .

District Takes a Hand in Hillside Development

By Darwyn H. Briggs
Soil Conservationist, SCS, Berkeley, Calif.

DIRECTORS of California's Black Mountain Soil Conservation District on the southern rim of the rapidly urbanizing San Francisco Bay area have changed their methods of working with landowners to keep pace with changing land use problems. This change is in keeping with their goal of "conservation of all land regardless of use."

The 40,000-acre district extends from the floor of Santa Clara Valley to the crest of Santa Cruz Mountains to the West.

In the past 20 years the district has changed from a rural vineyards-and-orchards area to one of subdivisions and estates. Its residents now are largely oriented to large defense industries.

The group approach

Finding onsite planning assistance to each landowner no longer feasible because of the increase in numbers, the district directors decided to concentrate on working with groups of people.

One of the first efforts in this direction was the preparation and publication of a "Hillside Development Guide"—a manual on soil and water conservation problems associated with building on the hilly terrain of the district.

The guide brought together information and recommendations from the Soil Conservation Service and from other agencies or units of government, including Santa Clara

County Departments of Planning, Health, and Public Works; County Fire Marshal; Cooperative Extension Service; California Division of Forestry; and planning departments of the cities of San Jose, Saratoga, and Palo Alto.

The publication contains detailed guidelines on the needs of domestic and fire-control water supplies, sewage disposal, building foundation stability, and erosion hazards as related to soil resources.

An associate

Nonagricultural and engineering interpretations of the district's soils are based on criteria developed

The expensive damage caused by a mudflow (left) could have been prevented through proper site selection and protective conservation engineering on the hillside to the foreground. Homeowners too often have to learn from their own experience (right) that it is unsafe to build on a flood plain, even of a small stream.

in cooperation with members of private engineering, planning, and landscape architectural firms.

As a result of this joint effort, consultants now look on the soil conservation district as an associate and cooperator rather than a potential competitor in planning, engineering, and landscaping phases of hillside development.

The guide contains four single-factor maps, color-keyed to land development limitations based on soils information. For each soil area in the district, the maps show the degree of limitations for building foundations and for septic tank filter fields, the soil's hydrologic grouping, and its capability for agriculture.

The California State Senate Fact Finding Committee on Local Government, after having the guide presented in testimony at a hearing, adopted it as the committee's annual report—a report distributed statewide to city and county planning officials as an example of cooperative planning and development.

District cooperation

As a result of the district's cooperation with other local governmental units, the city of San Jose asked the SCS soil conservationist to serve on its Hillside Advisory Committee to the City Planning Commission. The city's new Hillside Subdivision Ordinance contains provisions for homesite selection based on soil factors, erosion hazard, and conservation planting requirements.

San Jose City Planning Director Sanford Getreu says, "This protection of the hillsides and mountain areas is not to prevent or impede development but to guide that development to preserve and enhance the natural amenities of the city's heritage."

Two other major cities in the district, Palo Alto and Cupertino, have asked the district to review proposed hillside developments before their City Planning Commissions take action. The directors, assisted by the SCS staff, are making a comprehensive review and will report soil and other resource interpretations which should be considered for the orderly development of each tract of land.

The district also assists city and county planning departments by providing them with the resource data necessary for guiding development and for the periodic review of their general plans as required by State law.

Other district services include special interpretations of soil surveys for the planning and development of subdivisions, industrial plants, parks, and golf courses.

Agriculturists in Black Mountain Soil Conservation District are still provided with onsite technical assistance as before.

Directors of Black Mountain District and SCS staff members participate in local, regional, and statewide meetings. In 1965 the district was represented, for example, at the University of California City-Regional Planning Course and at the California State Soil Conservation Commission Special Long Range Planning Committee meetings.

The district also was represented at a regional foothill development conference with the theme, "The Shape of the Future"—a meeting sponsored by 70 organizations in the San Francisco Bay area and attended by more than 650 persons. Speakers from across the Nation discussed problems of urban development in foothill areas at the conference. ♦

Crops Saved From Wind-Blown Sand

EVERY SPRING the Miller Brothers of Milan, Ohio, saw high western winds dip into the 40-inch deep Galen, Arkport, and Oshtemo sandy loam of Erie County and sandblast their truck crops off the early market.

Now, they plant at right angles to the prevailing winds, leave rye and alfalfa in alternate cover strips, and maintain surface organic matter. Merlyn and Alto Miller haven't lost a crop since 1963.

That was the year they set up wind-erosion control practices as cooperators with the Erie Soil Conservation District. Cooperative Extension Agent Floren James and I studied the problem area and suggested planting their sugar beets in strips north and south across the prevailing winds.

The Millers observed that damage usually started about 100 feet from the edge of the field. The field strips, therefore, were made 100 feet wide. As a test, they made one strip 120 feet wide and another 80 feet for comparison. They used a "rotovator" to eliminate dead furrows and keep most organic matter near the surface.

This project was so successful that most of the farm was converted to north-south tillage the next year. The 100-foot strips were most satisfactory. Early truck crops are planted with rye or alfalfa in strips between.

The cover crop can be used in many combinations. In early April 1965 the Millers planted cabbage in 100-foot rotovated alfalfa field strips. Tomatoes were planted in the alternate field strips when the danger of the wind erosion was past, about 3 to 4 weeks later.

Sugar beets were put in a field seeded to rye. A 10-foot strip of rye was left between each 100-foot strip of sugar beets to control the wind erosion. After the sugar beets had a good start, the rye was knocked down to conserve moisture.

These methods and good fertility practices have maintained crop yields for the Millers since 1963.—LORING E. BEERBOWER, *Soil Conservationist, SCS, Sandusky, Ohio.* ♦

Dual-Purpose Road Fills Make Lakes in Kansas Highway Program

By Franklin C. Kinsey
Area Engineer, SCS, Manhattan, Kans.

KANSAS motorists can look forward to smooth rides with increasingly better views—thanks to imaginative planning by the State Highway Commission, private landowners, and several conservation agencies.

The views will be of new artificial lakes scattered along the highways. The smooth rides will be over the combination earth dams and road fills that produced the lakes by trapping runoff rainwater from surrounding land.

Besides giving a beauty treatment to the Kansas countryside, the cooperative projects hold lots of promise for conservation and recreation uses.

Many will be ideal areas for family picnicking, fishing, and other water-based pleasures. All will provide some protection from soil washing and flood hazards through temporary storage of heavy rainfall. In certain locations they can be used to water thirsty plants and livestock.

In the rolling hills of east north-central Kansas, the Soil Conservation Service, local soil conservation districts, and the highway commission have already installed 14 of these cooperative projects on State and Federal highways. Thirty-four have been installed on county and township highways.

Back in 1958 the State Highway Commission of Kansas began furnishing maps of proposed highway construction to the Soil Conservation Service and local soil conservation districts. By 1961 the need for mutual planning for good roads and land-protection practices was well established. At that time the State Highway Commission, the Soil Conservation Service in Kansas, and the State Soil Conservation Committee entered into a formal working arrangement. Refinements and agreements with other agencies have followed.

An investigation of the proposed location is made by conservation agencies and the landowner to determine suitability for a lake, and any problems which might be encountered. Should the parties involved agree to build the dam, engineers for State Highway Commission and SCS calculate the size of lake needed to contain the runoff rainwater during a large storm.

State Highway Commission designs and constructs the dam as part of its overall highway improvement plan. The local soil conservation district has responsibility for obtaining easements which allow water to be trapped and held on land controlled by power and utility companies, neighboring farmers, sportsmen's groups, and local governments. Thus, the entire venture is truly a cooperative project.

When the dam costs less than a bridge or culvert, the entire construction cost is paid by the highway commission. In the rolling hills of east north-central Kansas these projects quite often result in savings of $10,000 or more for each project. ♦

A level fill impounding a small lake now provides a broad base for a paved road (above) where formerly the country lane dipped down to a crossing over a metal culvert. A drop inlet spillway now carries excess runoff water under the road.

Dairyman Converts Entire Farm to Grass

"THE BEST WAY to keep the river from getting muddy is to tie the land down with grass," says Ralph Lucy of DeKalb County, Ala.

Mr. Lucy practices what he preaches, too. Since he quit growing cotton and corn several years ago, he has planted his entire farm to permanent grass.

He and his son, Don, operate a 190-acre dairy farm on Lookout Mountain near Fort Payne. To the Lucys, dairying is a family operation. "Our secret to staying in business is to do our own work," Ralph Lucy comments. His wife, Stella, and Don's wife, Freda, pitch right in with the milking of their 70-cow herd.

With the farm in grass, the land is protected from erosion, and, as Lucy puts it, "The land is productive all year long—not just for 3 or 4 months."

When Mr. Lucy switched to grassland farming, he was guided by his conservation plan. Agricultural Conservation Program cost-share assistance helped him get his pasture established.

Owner Ralph Lucy points out to SCS Conservationist W. J. Berry a highway underpass for the dairy herd. Lucy's home and dairy barn are in background.

Today, his program consists of 153 acres of perennial grasses and legumes. Kentucky 31 fescue, dallisgrass, bermudagrass, and white clover furnish top-quality grazing. Hay is cut from a well-fertilized orchardgrass-white clover mixture. Each year, almost 120 tons of high quality hay is saved and fed free-choice twice a day. Cows also get a helping of 16 percent dairy feed at milking time.

Two farm ponds provide water for the dairy cows and recreation for the family. Both are stocked with bass and bream. Soil Conservation Service technicians assisted with the design and layout.

The Lucys have just installed a modern parlor-type milking barn. An automatic feeder designed by Don Lucy keeps fresh feed in the trough as each cow comes in for milking.

Ralph Lucy has been a cooperator with the DeKalb County Soil Conservation District since 1956 and now serves as a supervisor in his local district. He is also past president of the DeKalb County Dairy Association, representative

Don Lucy and mother, Mrs. Stella Lucy, stand by some of the modern equipment in the new milking parlor.

from the DeKalb Farm Bureau Commodity Committee, a trustee of the Alabama Dairy Association, and a member of the Fischer Community Rescue Squad. Everyone in the family is active in the Union Hill Baptist Church.

Keeping things going is a regular job for the family. Unlike the 40-acre row crop farm of 12 years ago, however, it's paying off. By rotating weekend milking chores, everyone has time off, too.

The dairy operation is not only conserving and improving the land, it also is keeping the family together.—W. J. BERRY, *Work Unit Conservationist, SCS, Fort Payne, Ala.* ♦

Boys Club Sends SCS Photos to Europe

The Springfield, Pa., Interact Boys Club is using America the Beautiful lithographs to spread in foreign countries goodwill and a better understanding of the United States.

The boys have divided two sets of the Soil Conservation Service color pictures among Interact (International Action) clubs and exchange students in France and Germany. Sponsored by the Rotary Club, Interact is a worldwide organization of boys of high school age dedicated to international understanding.

Raymond S. Lambert, the Springfield Rotary Club's adviser to Interact, learned about the America the Beautiful photographs in a Government publication. He told the boys about them and they voted to send two sets to Europe.

"If the boys get a response from this distribution, they'll carry this idea further," Lambert said. "It's the boys' hope that these pictures will help spread goodwill by passing on pictorial information about conservation projects in this country. We'd like to start an exchange of pictures, a sort of pictorial penpal correspondence." ♦

Two-Way Radio System Speeds Watershed Engineering Work

BY USING a two-way radio communications system, the accomplishments of layout and checking crews on a watershed project in Arkansas have been increased 40 percent without any increase in personnel.

SCS officials in Arkansas say the system has been so successful in the West Fork and East Fork of Point Remove Creek watershed that a similar system will be installed in two other Arkansas watershed project areas.

The short-wave radio system makes it possible for survey crew members to keep in contact with all construction sites, so they know where and when they are needed.

The system operates between Morrilton, Ark., and 32 dam construction sites. It includes a base station at the project office with a 30-foot tower and antenna and 9 mobile units used by the inspectors, assistant inspectors, the project engineer, and the survey crew. There is an automatic repeater station with an 80-foot tower and antenna on the highest ridge in the watershed.

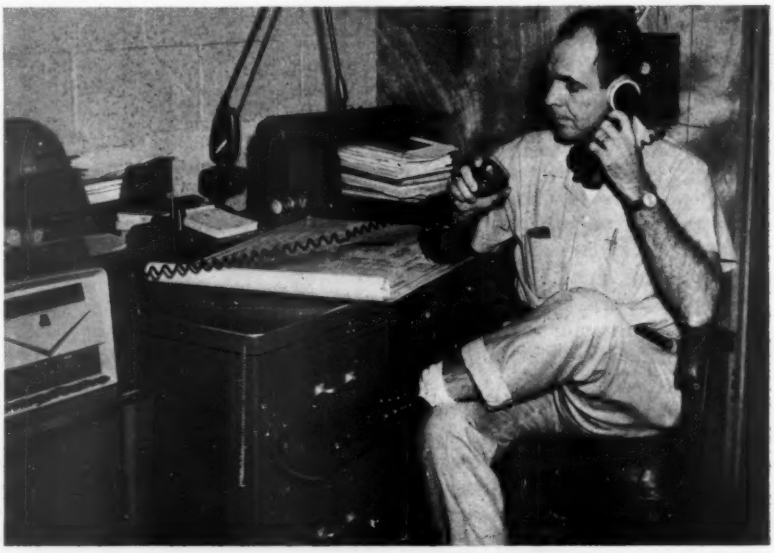
The range of communications varies from 25 miles in steeply rolling to mountainous watersheds up to 60 miles down in the valley.

The system makes possible more efficient and economical use of equipment and personnel and provides good communications between some remotely located sites and the project office, according to Clifford M. Brown, project engineer.

Brown said the new system eliminates the need for inspectors to visit him at home after regular working hours and allows him to substitute radio conversations for some trips. It also provides a means to quickly summon medical help in case of an accident. Fortunately, this has not been necessary.

Gene Austin of Austin Brothers Construction Company comments: "The communications system

Clifford Brown, project engineer, receives information from the Arkansas SCS State office and relays it to an engineer in charge of construction at one of the watershed sites.



helps us contractors, too. We can get quick answers if we run into trouble."

And Bob Hardy, general superintendent of Southeast Construction Company, adds:

"I've never worked any place where I got quicker action on a problem."

The total cost of the radio communication system was $7,000. W. B. Davey, SCS State Conservationist at Little Rock, said a $5,000 system is also being installed in the watershed project office at Waldron. This includes a base station, five mobile units, and a repeater station to serve the Poteau River and the Little Clear Creek watersheds. Seventeen floodwater-retarding structures and three large multipurpose dams are being built in the area.

Davey added that plans "are on the board" for a similar radio communications system for the Walnut Ridge Project office. It will serve the Flat Creek, Cooper Creek, Upper Tri-County, Lower Tri-County, Mud Creek, and Fourche Creek watersheds.

The radio systems can be moved from one location to another as one project is completed and another started. The operation of radio communications systems, including assignment of frequencies and station locations, is subject to the approval of the Interagency Radio Advisory Committee.—LYLE BOBECK, *Construction Engineer, SCS, Little Rock, Ark.* ♦

Recreation Is Big Factor in Farm Income

"CAMP IN THE WOODS" in Sherburne County, near Princeton, Minn., leads strong support to the belief that much of the farm income in the future will come from rural recreation.

Owner Len Thayer is a full-time contractor operating draglines and bulldozers during the busy summer season. He carries on a part-time farm operation of sheep raising and a hobby sideline of a few Arabian horses on a sandy 169-acre farm. He is also a cooperator of the Sherburne Soil and Water Conservation District.

During the summer of 1964, he and his family made a camping trip through the Black Hills of South Dakota where they tented in private camps along the way. This experience gave them the idea that they had a fine site for a private camp right at home in the "back 40" of second growth oak woods. They figured that Len could work on it during the off season of his contractor's job. His wife, Gwen, and the children could run the show during the summer camping season.

After returning from South Dakota, the Thayers spent a lot of time visiting camps all over northern Minnesota and Wisconsin to get ideas. The camp operators proved to be most cooperative in showing them around and passing on ideas on successful camp operation.

For technical help and information they turned to State Forest Ranger Darwin Anderson of the Sand Dunes State Forest, Larry Simonson of the Minnesota Agricultural Extension Service, the Minnesota State Board of Health, and the Soil Conservation Service.

"Camp in the Woods" was opened to the public the last of June in 1965. Campers found 40 tent and camping trailer sites in the woods with all the facilities for convenient and enjoyable camping. A recreation and service area in the old pasture at the edge of the woods included a small store and office, storage and equipment buildings, shower rooms, and a fine, fiberglass-lined swimming pool.

The charges include: A camp fee of $2 a night for a campsite; $2.25 for a campsite with electric outlets, with some reduction for camping by the week; and $0.25 a person for swimming. During the week anyone may come in to swim, but on weekends the pool is restricted to campers only.

Beautiful Elk Lake, where fishing and boating may be enjoyed, is not far from camp. Through special arrangement with a resort owner, campers with boats have free access to the lake.

Just before opening and for the 4th of July, the camp was advertised in the papers of nearby towns and regularly in the Vacation Guide section of a Minneapolis Sunday paper.

Public acceptance was immediate and good, exceeding the expectations of the proprietors. The camp has been well filled every weekend, and there have been many midweek campers, too.

A majority of the camp patrons came from the Twin Cities and nearby Minnesota, but six other States and Canada have already been represented with one camper from Arizona coming the farthest.

The Thayers were enthusiastic over the early success of their new enterprise and immediately after the close of the 1965 season started to improve and enlarge their camp.

They added 25 new campsites and a recreation hall near the swimming pool.

In 1966 group campers included local chapters of the National Campers and Hikers Association, Boy Scouts and Girl Scouts, Campfire Girls, and many church groups. On some weekends as many as 400 to 500 campers were on the grounds at one time.

In 1967 the Minnesota members of the National Campers and Hikers Association will hold their State meeting at Camp in the Woods. The Thayers plan to have more than 100 campsites ready for this season.—HENRY WILSON, *formerly* Soil Conservationist, SCS, *St. Cloud, Minn.* ♦

School for Retarded Uses Water-Based Therapy

By William R. Hauck
Work Unit Conservationist, SCS, Woodsville, N.H.

THE Laconia State School, Laconia, N. H., may have accomplished a real "first" in soil conservation history. A 1/3-acre pond was built exclusively for residents of this institution for the mentally retarded. Already, the innovation is showing results for the adults.

Mrs. Anne Tilton, the school's occupational therapist, came up with the idea and Arthur Toll, superintendent, gave the project his whole-hearted support. His main concern was finding a spot for the pond that allowed easy access and supervision.

At Mr. Toll's request the Soil Conservation Service helped him make the selection. The SCS had assisted the school with many of its farming problems since the late 1940's when it became a cooperator with the Belknap County Soil Conservation District.

Bob Wilson, recreation director, shows a group of boys (above) how to remove the hook from a trout caught in their new pond (below), which was stocked by the New Hampshire Fish and Game Department.

The soil conservationist found the first proposed site unsuitable for a pond. The soil survey map indicated another area, and borings confirmed that the soils were satisfactory. The conservationist also pointed out possibilities for developing the surrounding woodland into a safe recreational area, including a playfield, picnic area, and nature tour.

To help pay for the work, the Laconia State School Parents Association donated $1,500. SCS conservationists designed the pond and supervised construction, which was completed in October 1965.

In December, lessons in ice skating began. By mid-January more than 30 children had been taught to skate, and about 200 more had been taken out on the ice just to slide and have fun.

"The sound of these children laughing as they glide over their very own pond on a brisk New Hampshire winter day is wonderful to hear," Mr. Toll said.

Eventually, Mr. Toll hopes to get outdoor grills so the youngsters can learn to cook the fish they catch. Local sportsmen will be invited to coach boys and girls in tying flies and in catching and cleaning fish.

"This whole area was just wasteland a year ago," Mr. Toll said. "But with soil, water, and forestry conservation practices, we will reap more here than in most conservation areas. And this is because we, too, are conservationists. Only, we deal in 'human conservation'." ♦

A Conservation Profile:

Ex-Governor Believes in Wise Use of Land and Wildlife

WATERFOWL and vegetables, fish and trees, education and conservation—these are well-known on New Mexico's ex-Governor Tom Bolack's ranch.

On the same ranch can be seen 100 different kinds of vegetables, grains, and domestic grasses; a flock of almost tame "Canada honkers;" and trees grown to be given away. All this takes place on the B-Square Ranch in northwestern New Mexico where Governor Bolack is a cooperator with the San Juan Soil and Water Conservation District. It didn't come easy; nor without planning.

Tom Bolack wants to keep New Mexico green. Last year he gave 51,000 trees grown on the ranch to schools, churches, and other organizations to help beautify their grounds. Most of the trees were Navajo willow, poplar, and cottonless cottonwood grown from cuttings.

Wise land use

He is a believer in wise land use. "Every farmer and rancher should make the best use of his land," explains Bolack, and adds, "there is nearly always an odd corner, ravine, or other place to grow wildlife food and cover."

Fish ponds are a specialty on the ranch. In a 5-acre trout pond, an aerator was installed so more oxygen could be supplied to the fish during critical periods of the year. The ponds are fertilized with commercial fish food to assure maximum growth. A few 7-pound fish have been taken from these ponds, and many average-sized trout are harvested each year.

There are more than 50 small islands along the shore of one of the larger lakes. Bolack explains that these places are the nesting grounds for Canada geese and mallard ducks.

Increase cover

To increase the cover and food for wildlife, 15,000 trees and shrubs have been planted on the bottom land. Close to the lakes, wheat, corn, and grain sorghums are planted in 1- to 3-acre patches to provide food for the game birds and other animals during the winter months.

On his 60 acres of wet lands, it is estimated by the New Mexico State Game and Fish Department that during the fall and spring migratory seasons more than 10,000 game birds find food and cover.

Governor Bolack has been a cooperator with the San Juan District since 1957. When some of his best land was plagued with a high water table, the Soil Conservation Service designed and staked a drain ditch that lowered the water table about 4 feet. Now this land is growing vegetables, feed grains, and a good many of the trees that he gives to institutions in New Mexico.

Tom Bolack of New Mexico

Concrete ditch structures have been installed on the farm to control the irrigation water. Since vegetables are raised every year on most of the land, the fertility of the soil must be kept up. Each year after the vegetables are harvested, the land is planted to small grain as a cover and green manure crop. In the spring, this vegetation is plowed back into the soil after it has grown 6 to 10 inches high. Last spring 3,000 tons of barnyard manure was hauled from a dairy farm and spread to help the soil-building crops.

In 1966 more than 12,000 school children visited his ranch, viewed his wildlife and conservation oper-

Governor Bolack delights in the Canada geese that visit his ponds.

ation, and were shown the game trophies he has in his ranch house. Thousands of people attending local conventions in that part of the State have visited the B-Square and observed conservation at work.

Bolack has been mayor of the city of Farmington, president of the Farmington Chamber of Commerce, representative to the State legislature, lieutenant governor, and governor of the State of New Mexico.

He is a director-at-large for the United States Chamber of Commerce. He is a committee member and worker for the Upper Colorado River Project.

Last year he was awarded the "Ducks Unlimited" plaque for his outstanding contribution to waterfowl conservation and propagation from J. Bryan Stevenson, State chairman for Ducks Unlimited. ♦

Economics of Outdoor Recreation. By Marion Clawson and Jack L. Knetsch. *1966. Johns Hopkins Press, Baltimore (for Resources for the Future, Washington, D. C.) 328 pp. $8.50.*

Two well-qualified resource economists on the staff of Resources For The Future have collaborated on a thorough-going treatise on the economics of outdoor recreation.

The publishers say the book "is directed primarily towards recreation administrators and planners and students in these fields, but it will also be of interest to social scientists generally."

By necessity, the book is highly theoretical, but it can be useful in studying the economics of supply and demand for outdoor recreation. It is not a guidebook to recreation management but a scholarly source book for people concerned with the methodology of outdoor recreation analysis. Those unfamiliar with economic theory and principles may find the book heavy going.

Important to the student of outdoor recreation is the treatment of the very complex interrelationships which so often develop between the recreation area, the user, and recreation use. User preferences, demographic characteristics of users, locational aspects of sites, the influence of rules of management and institutional requirements, such as zoning, standards of operation, permits and licenses, are discussed with unusual skill.

Part IV contains lively and challenging chapters on the value of land and water resources when used for recreation, economic impacts of outdoor recreation on local areas, costs and investment considerations in providing public recreation facilities, and pricing and paying for public outdoor recreation facilities.

The authors assume that recreation workers have a growing concern for the economic and social aspects of recreation. This reviewer hopes such concern is widespread and that the book commands extensive attention and use among professionals in the recreation field.—Lloyd E. Partain, *Assistant to the Administrator for Recreation, SCS.*

Future Environments of North America. Edited by F. Fraser Darling and John P. Milton. *1966. Natural History Press, Garden City, N.Y. 767 pp. $12.50.*

Future Evironments of North America is the record of a conference sponsored by the Conservation Foundation and includes 34 scholarly papers plus verbatim reports on the intrasession discussions.

F. Fraser Darling, who served as chairman for the conference, set the stage for the wide-ranging ideas of the meeting by characterizing it as a "game of projectionism." Louis Mumford warned in his closing statement against letting technology supersede human values in the future environments.

To attempt to read the volume straight through is an experience in total immersion that only the most dedicated "conservationist" could survive. But to keep it handy will tempt the reader to many absorbing and profitable hours.

There are few aspects of the environment, the developmental history of resource use, and the economic and social patterns related to conservation which are not explored here. In some instances, the discussions which took place between papers were more interesting and revealing than the papers themselves.

Among the 34 participants are many impressive names, such as Durward Allen, A. Starker Leopold, Firman Bear, Gilbert White, Kenneth Boulding, Marion Clawson, Joseph Fisher, Pierre Dansereau, and Ian McHarg.

The book is dedicated to the late Edward H. Graham, former Director of the Plant Technology Division of SCS, who died not long after the conference was held. He served as a deputy chairman, and took a leading role in many of the group discussions.

In introducing the session on "Regions: Their Developmental History and Future," Dr. Graham said, "There is evidence today... to indicate that man is beginning to think of himself as part of nature. In doing this, I think the ecologist is going to have to give full consideration not only to environment, but to ideas and inventions and attitudes as parts of the ecosystem."

It is a stimulating experience to be exposed to the thinking of so many creative minds as they consider the broad field of conservation. Whether the reader is searching seriously for new ideas or simply enjoying the game of "projectionism," this is one of the books no conservationist should pass by.—Katharine Mergen, *Information Division, SCS, Washington, D. C.*

New Publications

The Creek and the City. *1967.* NARRATIVE BY JOHN GRAVES. *U.S. Dept. of Int. 52 pp., illus.* A special report to the Nation on urban pressures on a natural stream—Rock Creek Park and metropolitan Washington.

As an extension of its assignment to prepare a plan to make the Potomac River a model of conservation for the Nation, the Department of the Interior prepared a special staff report on Rock Creek, a small tributary that flows through the District of Columbia.

The Department has a special concern with this stream because its flood plain and gorge comprise Rock Creek Park administered by the National Park Service. The entire Nation has an interest in it because of its intimate relation to the Nation's capital and its history.

The watershed provides an excellent example of the complex problems that assail any small watershed in a suburban setting. The report is valuable as a case study for citizens and watershed planners everywhere.

The Public Law 566 watershed project already underway, the influence of the soil conservation district, and the work of the Soil Conservation Service are recognized as major factors in the needed program for sediment control and land use planning.

Much of the information for the report was provided by the Soil Conservation Service.

Mosquito Prevention on Irrigated Farms. BY BULLETIN TASK FORCE, SUBCOMMTTEE ON VECTOR CONTROL, INTER-AGENCY COMMITTEE ON WATER RESOURCES. *1967. USDA Agr. Hbk. 319. 32 pp., illus.* Gives information on the overall importance of irrigation-mosquito problems; manmade mosquito sources on irrigated farms; relationship of mosquito prevention to good irrigation agriculture and aquatic wildlife conservation; and basic principles and practices for mosquito prevention on irrigated farms.

Review of Research on Laterites. BY R. MAIGNIEN, *1966. United Nations Educational, Scientific, and Cultural Organization (UNESCO, Paris). Unesco Publications Center, New York, N. Y. 148 pp., illus. $5.00.*

Prolific literature has developed since F. Buchanan (1807) gave the name "laterite" to the mantle of ferruginous depositions which covers large areas in southern India. At the request of Unesco, R. Maignien prepared a review of research on laterites for use as a basis of discussion on laterites organized by Unesco and held at Tananrive, Madagascar, in 1964.

The result of the symposium is the publication of this book as a volume of the "National Resources Research" series. The main topics the author covers are the morphological and analytical characteristics of laterites and their global distribution, origin, clasification, and utilization.

Guidelines for Establishing Water Quality Standards for Interstate Waters. *Rev. 1967. U. S. Dept. Int., Federal Water Pollution Control Administration. (14 pp.)*

Comprehensive Plans for Improving Rural Counties. BY ERLING D. SOLBERG. *1967. USDA. Agr. Inf. Bul. 316. 10 pp., illus.* This bulletin, by the Economic Research Service, offers step-by-step suggestions for planning—from the setting up of a planning board through listing of needs for economic, civil, legal, cultural, housing, and natural resources planning.

Soil Surveys

Henderson County, Kentucky. BY HENRY T. CONVERSE, JR., AND FRANK R. COX, JR.. *1967. 108 pp., illus.; maps 4 inches to the mile (1:15,840).* Field survey by Henry T. Converse, Jr., Frank R. Cox, Jr., Eullas Jacobs, Robert C. Bryan, and James C. Ross.

Franklin County, Massachusetts. BY JOHN R. MOTT AND DONALD C. FULLER. *1967. 204 pp., illus.; maps 4 inches to the mile (1:15,840).* Soils surveyed by F. A. Filios, D. C. Fuller, and C. F. Hotz.

Menard County, Texas. BY DANIEL R. COFFEE. *1967. 51 pp. illus.; maps 3.17 inches to the mile (1:20,000).* Soils surveyed by Daniel R. Coffee, Otto W. Bynum, and D. Randolph Burton.

Treasure County, Montana. BY RONALD L. MOSHIER AND ARMER G. FIELDER. *1967. 173 pp., illus; maps 3.17 inches to the mile (1:20,000).*

AMERICA THE BEAUTIFUL COLOR LITHOGRAPHS

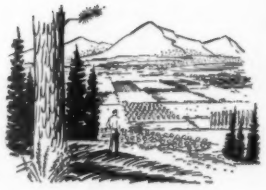
America The Beautiful—North Carolina USDA SOIL CONSERVATION SERVICE

TROUT FISHING IN SILT-FREE STREAM, AVERY COUNTY SOIL AND WATER CONSERVATION DISTRICT

Full-color lithograph prints suitable for framing—one for each State, Puerto Rico, and Virgin Islands—are available from the Superintendent of Documents for 10 cents each or $5.00 for set of 52. Obtain order blanks from your local SCS or post office.

From the Administrator:

A New Conservation Charter for USDA



One of the most important conservation documents of our times is now being distributed to conservation leaders and workers throughout the Nation.

The publication, *Resources in Action,* is the product of a departmentwide study under the direct leadership of Secretary of Agriculture Orville L. Freeman. It redefines the resource conservation mission of USDA in light of needs today and for the rest of the century. It outlines timely new policies and goals. It points to ways these policies and goals will be implemented.

The publication has threefold significance. It spells out the nature and dimension of conservation action urgently required to meet the resource needs of American people between now and the year 2000. It demonstrates that, by the very location and character of these resource problems, USDA has major responsibility for conservation leadership. And, finally, it charts for USDA the essential steps we must take in our programs and in our cooperative efforts with other agencies and units of government, and with citizen groups, to achieve the goals.

The policies and goals, moreover, are particularly geared to the growing concern for the quality of man's total environment. Conservation of that environment, Secretary Freeman asserts in the foreword, "is a physical task, a social philosophy, and an economic necessity."

As the report says, conservation today encompasses the full sweep of interrelated natural resources and their management and use. Use, restoration, and preservation are compatible aims. Through skillful multiple-use management, we can and must reverse the downward trend in the quality and adequacy of the natural world in which we live.

This is "creative conservation" —a "full-use" policy. It is needed to guide the American people in the use of their renewable natural resources in the face of exploding technology and unremitting population pressures. It recognizes the need for involvement of people and their governments in conservation programs at the ground level.

The study blueprints seven major objectives toward which USDA's conservation efforts will be vigorously directed. Each of these contains a clear charge to the Soil Conservation Service; for we, in turn, bear a high degree of responsibility as the Departments's technical arm for action in soil and water conservation. These objectives are:

—Upgrading the quality of the environment.

—Strengthening the economy and standards of living in rural America

—Helping to find solutions to America's water problems.

—Obtaining greater benefits from our forest lands.

—Providing creative opportunities for outdoor recreation.

—Widening public awareness and involvement in resource conservation.

—Helping other nations solve their resource problems.

To achieve these objectives, we must do more than accelerate the pace of accomplishments in the familiar approaches to conservation. The times call for some specific new working tools. *Resources in Action* charges SCS, along with other USDA agencies, to:

—Search out and promote the best possible scientific management techniques to meet future resource needs efficiently without damage to the land or to the environment.

—Extend the multiple-use concept of resource planning to all land resources to obtain the best possible patterns of planned resource use and rural development.

—Develop our resource capacity sufficiently to assure abundant supplies of food and timber, as well as clean water, pure air, more outdoor recreation, and a more wholesome and beautiful environment.

—Stimulate more effective local leadership in conservation through State and local governments, by soil and water conservation districts and other conservation groups, and by the owners of large and small timber holdings.

Resources in Action goes beyond these wide-brush strokes, however, to delineate in considerable detail many individual policies and goals that become parts of the whole.

For this reason, the document will be "required homework" for all SCS employees.

I hope it will likewise be a useful study reference for the leaders of soil and water conservation districts, sponsoring groups of watershed projects and resource conservation and development projects, and others with whom we work.

Determination and intelligent application of skills will be required from each of us to insure that the Soil Conservation Service does its part in this all-important task which Secretary Freeman has dubbed "Agriculture/2000."

I have assured the Secretary that we are committed fully to helping USDA fulfill the tremendous responsibility it bears for leadership in resource conservation, both at home and abroad.

D. A. WILLIAMS

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Field Day Lets Students See Farm Activity

AN ANNUAL field day gives fourth graders in Fremont, Ohio, an opportunity to visit a farm and see how food is grown and resources are conserved.

The Sandusky County Soil and Water Conservation District board of supervisors cooperates with Dr. R. B. Oldfather, superintendent of public schools, in arranging the trip to the Christy farm nearby.

The teachers are given information on the subject matter a month before the tour is to be held in May. The children study the information in preparation for the trip.

The classes are divided into groups of 60 that stop at 4 stations where experts explain features of the farm.

At the first stop the children see cows, sheep, hogs, barns, hay, and grain. County Agents Glenn Maddy and Fran Junis explain how livestock are cared for and what products we get from them.

At the second stop, Dave Coulter, SCS soil conservationist, discusses soils and their relation to man. A soil pit is used to illustrate soil layers and characteristics.

The groups visit a farm woods and see trees and wood products. Ed Hoffman, a Sandusky County farmer and member of the Ohio Forestry Association, explains the need for forests and demonstrates products made from trees.

Many students get their first opportunity to touch farm animals on the conservation field day. County Agent Glenn Maddy holds the lamb.

At the fourth stop, George Ledbetter, Sandusky County game protector, tells the students about wildlife in Sandusky County. He shows them plantings that were made on the Christy farm in 1960 and 1961 for wildlife food and cover.

Farm wagons are used to transport the children between stops. Most of them experience their first ride on a farm wagon on the trip.—JOHN E. BATTLES, *Work Unit Conservationist, SCS, Fremont, Ohio.*